

Chairman's Award - Team 1629

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2019 - Team 1629

Team Number

1629

Team Name, Corporate/University Sponsors

Garrett County Public Schools/Pillar Innovations/Beitzel Corporation/Wilson Supply & Northern Garrett High School & Southern Garrett High School

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

GaCo is proud to have 100% of alumni to continue their education past HS, 85% in a STEM related field. With only 20% of local students going on to college, this is quite an accomplishment! Alumni have attended Cornell, MIT, Case Western, Bucknell, WVU, VA Tech, UMD, Penn, and WPI. These students, who have been inspired to become STEM professionals, inspire younger students to follow their example. Most importantly, 15% of our alumni volunteer or mentor FIRST programs and the number is growing.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

FIRST programs have ignited Garrett County as a hotbed of robotics throughout Maryland. Local organizations and schools have grown to rely on its FIRST teams to conduct STEAM activities. From launching pumpkins to straw rockets, or decorating town streets with geometrically constructed Easter chalk eggs, FIRST programs are a part of Garrett County's fabric. As a tourist destination, visitors remember Garrett County by its FIRST program. FIRST and Garrett County are becoming one in the same!

Team's innovative or creative method to spread the *FIRST* message

GaCo uses three methods to make a difference through FIRST programs: Partnerships, Making Connections and Engagement. We use partnerships as a win-win scenario for our all involved. Our team gets creative in making connections which tie STEAM into everyday life. We also rely on engagement through LEGO. GaCo is synonymous with STEAM fun in our local and FIRST community. We openly share with other teams in order that they can make a difference in their communities as we have in ours.

Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

Our team members are enthusiastic and genuinely believe they are making a difference. They have experienced the joy and satisfaction of engaging an 8 year-old in a STEAM encounter. They are anxious to share their passion and are ready to help others have the same joy. We seek every opportunity to present at workshops, our FRC retreat and championship conferences. It's what we intentionally model in the pits for other teams to observe at district and championship events- hopefully to emulate!

Describe the team's initiatives to help start or form other FRC teams

FIRST programs are essential to establish our vision, which we have expanded past Garrett County to all of Appalachia. To that end we have formed a partnership with the Appalachian Regional Commission (ARC) which will provide \$60K in matching federal funds to start FIRST programs, including FRC, similar to the GaCo Model. Since 2017, we have visited 6 school districts in MD, WV & PA to demonstrate the the power of FRC teams to impact schools and school systems-our Grassroots Advocacy Campaign!

Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)

This year, we are responsible for 13 FLL, 7 FTC and 5 FLLJr teams. An increase of 19% overall & 40% for FTC in Garrett County. Our FLL qualifier grew by 18% from 22 to 26 teams. Most excitingly we are working to create Unified FIRST teams that will be more inclusive to students with special needs. Through our advocacy at the grassroots level we convinced two neighboring school districts to start FIRST programs using our FRC team as a model (the GaCo Model) for making system-wide impact.

Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program

For the 2nd year in a row we have secured a \$10K MSDE grant that we use to develop a "Pipeline of Success" as students progress through FIRST in Garrett County. We have used the grant to support more FTC teams that meet during the school day making use of each school's activity period. GaCo starts its FTC teams at the 7th grade level finding that, after 4 years of FLL, students are ready to move on. We have also found success in separating our FTC teams by gender at the middle school level.

Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)

As per the GaCo Model, all of our teams (FLL, FTC, FRC) are expected to mentor younger FIRST teams. Emphasis is placed upon personal development through helping/teaching others. To facilitate this we have instituted mentor nights that all GaCo teams are invited to meet together. Our FRC students serve as role models (referees) during our local FIRST events such as our FLL Qualifier for younger students to emulate. Our team provides a YouTube series of Tips and Tricks for FLL & FTC.

Describe your Corporate/University Sponsors

Because we come from such a rural area we have developed personal relationships & connections. GaCo 1629 is a family! Our school system, Pillar Innovations, GC Government, and Garrett College are vital to our success. Since our rookie year, 3 project engineers from Pillar have been our robotic backbone. These mentors are vested in the success and development of our team and its students. Our professional mentors are excellent role models and inspire students to follow in their STEM footsteps.

Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years

GaCo's sponsors include its public school system, which shows a steady increase in engineering and computer science graduates. AP COMP SCIENCE test scores are at an all time high with over 45% taking this high level class, excitingly with a 15% bump for females. GaCo continues to reach every 3rd, 4th & 5th grade student in its district with STEM Waypoint lessons which are designed to ensure all students are STEM ready as well as establishing a systemic approach to embedding FLL in 6th grade.

Describe how your team would explain what *FIRST* is to someone who has never heard of it

FIRST represents opportunity, not only to build competitive robots that we can all rally behind, but more importantly, an opportunity to make a difference to ALL students- on a FIRST team or not. It provides a framework that both develops our FRC students for real world challenges as well as empowering us to change the world one child at a time. An opportunity to follow a ROADMAP to help others make a difference. It sets FIRST apart from the other youth robotics programs. It is why we do FIRST.

Briefly describe other matters of interest to the *FIRST* judges, if any

In January our Board of Education unanimously passed a Policy and Procedure which establishes FIRST as the "official" robotics program for Garrett County Public Schools (GCPS). The P&P also solidifies the unique partnership we have with our school system in that it relies on our team to implement the system's entire FIRST program, all 26 teams, FLLJr through FRC. This is something our team celebrates and wishes to duplicate throughout Appalachia in order to ensure all kids are STEM Ready!

Team Captain/Student Representative that has double-checked this submission.

Jessica Storck

Essay

VISION DRIVEN

For fifteen years GaCo 1629 has been DRIVEN by a passion to make a difference- not so much for ourselves, but for others. This desire has sharpened into a VISION for all kids in Appalachia to be STEM READY. The JOURNEY started with our team wanting to make a difference in our schools and communities in Garrett County. The success in making that difference led us to broaden our vision to all of Appalachia where we are firmly rooted. We believe the Appalachian region is where we can make the strongest impact to others. It is our "mission field."

To ARRIVE at our DESTINATION, all kids in Appalachia be STEM ready, we crafted a ROADMAP. Our ROADMAP will help NAVIGATE to (1) identify rural school districts in Appalachia, that could benefit from a FIRST program such as ours and (2) help those districts establish a FIRST program based on the GaCo MODEL. We will use FIRST as our VEHICLE to ensure that all kids in Appalachia are STEM Ready.

The GaCo Model (DELUXE PACKAGE) - Not Your Father's FIRST Team

It's been a 15 year process to develop the three components of the GaCo MODEL: (1) mentoring younger FIRST teams, (2) meaningful community partnerships, and most importantly, (3) systemic impact- having our FIRST program make a difference to EVERY student in our school system. The GaCo Model is what makes our FIRST program valuable to our community and school system. So valuable, that our Board of Education (BOE) has adopted official Policy and Procedure which establishes FIRST as the "official" robotics program in Garrett County and gives FRC 1629, GaCo, charge over the entire FIRST program in our district. This is something of which our team is very proud and has worked hard to achieve.

Although systemic impact is by far the most important piece of the GaCo Model, mentoring younger FIRST teams is essential to the our success. Placing an expectation on every member of our FRC team to mentor a younger FIRST team not only begins a pattern of mentorship in our students, but helps build capacity for GaCo to support more FIRST teams. 15% of our alumni currently mentor or volunteer for FIRST programs. We anticipate that this percentage will grow as a result of our FTC initiative. GaCo members mentor teams in all three of the FIRST programs enabling our team to support 13 FLL teams, 7 FTC teams, and 5 FLLJr teams- an increase of 40% of total GaCo FIRST teams from last year.

GaCo has developed many innovative ways to support its school-based FIRST teams. We have instituted GaCo mentor nights in which all FIRST teams are invited to meet at centralized locations. The intent is to facilitate the easy access of FRC students to our teams, many of which, meet during the school day. GaCo continues to host a FLL qualifier which has grown to 26 teams, from Garrett and Allegany County. GaCo will be hosting a "FIRST Fun Day" for FLL and FTC scrimmages to extend each programs' season to the end of school.

The success of our school-based FIRST initiative is measured not only by the number of teams GaCo supports but the impact the program is having on our school system. Route 40 Elementary School has embraced both FLL and FLLJr as an embedded STEM activity during the school day for its entire 2nd, 3rd, 4th, and 5th grades. Northern Middle has adopted a program which we started several years ago that replicates the FLL experience for its entire 6th grade class. Both schools follow this inclusive model, involving all students- even those with IEPs and 504 plans (special education students). These schools serve as an example of the power that FIRST programs have to make a difference in schools.

DRIVING IMPACT

GaCo's FIRST teams gain much attention from not only our BOE, but from our local communities, and around our state. This year, 7 of our GaCo FLL teams will be advancing to the 2019 Maryland State FLL Championship. 10% of the total will be composed of GaCo teams which are from a school system that only has 0.44% of the total number of students in Maryland. Similarly, GaCo FTC teams that have advanced to their State Championship represent about 8.3% of the total teams competing from across Maryland, again, from a county school system that has only 0.44% of MD students.

Meaningful community partnerships are a large part of the GaCo MODEL as well. By meaningful we mean that GaCo seeks partnerships that are win-win for all partners involved. A wonderful example is our partnership with the Dove Center for victims of domestic violence. We have become part of their annual Festival of Trees event where our team donates a decorated Christmas tree, with custom made LEGO ornaments. In turn, GaCo is allowed access to kids and families that attend to participate in holiday-related STEM activities. This is just ONE of many partnerships GaCo has established to ensure that all kids are STEM ready!

Essay - page 2

GaCo's primary partner is Garrett County Public Schools (GCPS). Partnering with GCPS has allowed our team to make a difference to EVERY student in our county's school system. This is the second year that we have fully implemented our STEM Waypoint Initiative in which GaCo students teach highly engaging STEM lessons to every 3rd, 4th and 5th grade student, this includes ALL students- even those with special needs. These lessons have allowed GaCo to give away over 4,000 LEGO Top Spinners, which students get to build and keep, 2,500 sets of our binary-based number guessing cards, and over 1,500 of our LEGO Golden Ratio Calipers in which students learn about Phi. Our STEM Waypoints are something we openly share with other teams; what's really exciting is that other FRC teams are replicating these lessons in their own school systems!

Our systemic impact on GCPS goes beyond our STEM Waypoint lessons. Our team regularly conducts Title I STEM workshops for parents and students and has taken a lead in our county's professional development program. For three years in a row, GaCo has participated in the GCPS annual all county staff development meetings. This year, GaCo students built a life-sized Rube-Goldberg machine that resulted in a pie to the face of our lead mentor. Our example to teachers of how to make learning hands-on and motivating in their classrooms, and it worked! Also, in honor of this year's FIRST Challenge theme, GaCo is excited to continue its systemic impact by presenting a LEGO 39" scale model of the Saturn V to our school system's planetarium classroom. Every GCPS student visits our county's planetarium at least once during the school year and will have the opportunity to interact with it.

VALUE ADDED ACCESSORIES

The GaCo Model has made our team valuable not only to GCPS, but also to FIRST Chesapeake as well as the Maryland State Department of Education (MSDE). GaCo has presented at MD's K-12 Education Conference, Common Ground. At the request of MSDE, GaCo has presented at the Mid-Atlantic Conference for Personalized Learning as well as various workshops for teachers and MSDE staff. GaCo was honored to have the opportunity to represent FIRST at the 2018 Maryland Association of Boards of Education in November where we shared about how FIRST can have systemic impact in schools and school systems. We have learned that superintendents and school boards LIKE the idea of having a FIRST team in their school system, but LOVE the idea of having a FIRST team that makes a systemic impact.

OVER THE NEXT HILL

We have proven our program in Garrett County and the Chesapeake District and are ACCELERATING along a new ROUTE. Our team is partnering with the Appalachian Regional Commission (ARC) to do this. We were privileged to present the GaCo Model to Tim Cook, the Federal Co-Chair of the ARC. He observed our 3rd grade STEM Waypoint lesson and was impressed enough to offer us a \$60,000 matching grant from ARC! We will use ARC funding along with our newly created non-profit (501c3) foundation to help our team meet travel costs and provide startup funding for FIRST teams in Appalachia established under the GaCo Model.

Prior to HITCHING UP with ARC, we have made significant progress by starting a FTC team at Tucker County High, and working with a middle school FTC team at Central Preston, in WV, both operating under the GaCo Model. Also, we've made significant progress with three school systems in southwestern and central, PA. Mifflin County School District, PA, has bought totally into the GaCo Model. Their superintendent has inspired us to share our story with anyone and everyone who will listen. Most recently, we presented how FIRST teams can have systemic impact at the WV State Science Teachers Conference.

While on the ROAD we are FUELED by something we call "Grassroots Advocacy". Our team has participated in advocacy at both the State and Federal level by participating in the FIRST National Advocacy Conference and helping to establish the Maryland General Assembly's Robotics Grant Program through MSDE. Such advocacy is important. However, we see the most difference being made working at the local level where we advocate with local school boards, county commissioners and superintendents.

Our DESTINATION is STEM Ready Kids! This is where we can make a difference. We've learned from previous experience, all we need to do is to tell our story, show our passion, and share what's possible. It's something that GaCo students do well. Once school boards and superintendents catch the VISION of the GaCo Model, the details always fall into place. All we need to do is show them what is possible. According to our Superintendent, "School systems can do anything with their budgets, they just can't do everything." That's helped our team realize the tremendous responsibility we have to be a valuable part of our school system and the responsibility we have to share our story so that other FIRST teams can do the same in rural schools and school systems like ours.